TSTF
TECHNICAL SPECIFICATIONS TASK FORCE
A JOINT OWNERS GROUP ACTIVITY

April 23, 2004 TSTF-04-03

Dr. William D. Beckner, Director
Operating Reactor Improvements Program
Division of Regulatory Improvement Programs
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

SUBJECT: TSTF-372, Revision 4, "Addition of LCO 3.0.8, Inoperability of Snubbers"

Dear Dr. Beckner:

Enclosed for NRC review is Revision 4 to TSTF-372, "Addition of LCO 3.0.8, Inoperability of Snubbers."

At the February 11, 2004 meeting between the Nuclear Regulatory Commission (NRC) and the Nuclear Energy Institute (NEI) Risk Informed Technical Specification Task Force (RITSTF), the NRC requested a simplified risk assessment to support the provisions of LCO 3.0.8.b proposed in TSTF-372. LCO 3.0.8.b provides 12 hours to restore snubbers not able to perform their support function associated with more than one train of a supported system prior to declaring the supported system inoperable. The enclosed Revision 4 includes the requested assessment.

We request that NRC review of TSTF-372 continue to be granted a fee waiver pursuant to the provisions of 10 CFR 170.11. Specifically, the request is to support NRC generic regulatory improvements (risk management technical specifications), in accordance with 10 CFR 170.11(a)(1)(iii). This request is consistent with the NRC letter to A. R. Pietrangelo on this subject dated January 10, 2003.

Should you have any questions, please do not hesitate to contact us.

Dennis Buschbaum (WOG)

Bert Morris (BWROG)

Patricia Furio (CEOG)

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Enclosure

cc: Biff Bradley (NEI)

A001

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Technical Specification Task Force
Improved Standard Technical Specifications Change Traveler

Addition of LCO 3.0.8, Inoperability of Snubbers

NUREGs Affected: ☑ 1430 ☑ 1431 ☑ 1432 ☑ 1433 ☑ 1434

Classification: 1) Technical Change Recommended for CLIIP?: Yes

Correction or Improvement: Improvement

Industry Contact: Denny Buschbaum, (254) 897-5851, dbuschb1@txu.com

See attached justification.

Revision History

OG Revision 0 Revision Status: Closed

Revision Proposed by: WOG

Revision Description:
Original Issue

Owners Group Review Information

Date Originated by OG: 21-Jul-00

Owners Group Comments:
(No Comments)

Owners Group Resolution: Approved Date: 08-Nov-00

TSTF Review Information

TSTF Received Date: 08-Nov-00 Date Distributed for Review: 08-Nov-00

OG Review Completed: ☐ BWOG ☐ WOG ☐ CEOG ☐ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 18-Jan-01

NRC Review Information

NRC Received Date: 10-Apr-01

Final Resolution: Superceded by Revision Final Resolution Date: 03-Aug-01

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TSTF Revision 1 Revision Status: Closed

Revision Proposed by: TSTF

Revision Description:
This revision is a complete replacement of Revision 0.

The change has been narrowed in scope to only address snubbers. Other non-Technical Specifications support systems will be addressed in Risk Informed Technical Specifications Task Force (RITSTF) Initiative 7.

TSTF Review Information

TSTF Received Date: 13-Dec-01 Date Distributed for Review: 13-Dec-01

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 20-Dec-01

NRC Review Information

NRC Received Date: 08-Jan-02

NRC Comments:
5/3/2002 - e-mail from NRC: Change requires a safety justification beyond precedent that relied on engineering judgment of "low risk." Staff feels this may best provided by a risk-informed approach that demonstrates congruence with guidance such as RG 1.174 and RG 1.177, using bounding arguments as appropriate to avoid the need for detailed calculations. Staff is formulating feedback to TSTF.

7/19/2002 - Revision prepared.

Final Resolution: Superceded by Revision

TSTF Revision 2 Revision Status: Closed

Revision Proposed by: TSTF

Revision Description:
Based on NRC comments, incorporated risk information to support the change.

Made an editorial change to LCO 3.0.8 to be more consistent with the wording of the other LCO 3.0 Use and Application rules by eliminating multiple instances of the phrase "Technical Specifications." The phrase is not needed as the Section 3.0 LCOs only apply to the Technical Specifications.

Added an additional paragraph to the Bases to describe the use LCO 3.0.8 to circumstances in which a more than one train of a multiple train supported system are affected by snubbers. Revised the Bases to be more consistent with the terminology used in LCO 3.0.8 and the other 3.0 Bases.

TSTF Review Information

TSTF Received Date: 19-Jul-02 Date Distributed for Review: 19-Jul-02

OG Review Completed: ☐ BWOG ☐ WOG ☐ CEOG ☐ BWROG

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TSTF Revision 2 Revision Status: Closed

TSTF Comments:
(No Comments)

TSTF Resolution: Approved Date: 31-Jul-02

NRC Review Information

NRC Received Date: 13-Aug-02

NRC Comments: Date of NRC Letter: 13-Dec-02

From 12/31/2002 Letter:

We are sensitive to the need for appropriate completion times for repair or planned maintenance of certain snubbers that affect more than one train. For example, the discovery of
a failed snubber should not place the plant in a shutdown sequence. However, the proposed wording of the LCO 3.0.8 is too broad. Further, our experience in working with the TSTF to develop the generic bounding seismic risk analysis for one-train impact leads us to believe that licensees in general may not be capable of performing a meaningful seismic risk assessment. Since the current 50.65(a)(4) industry guidance does not address seismic risk, we cannot rely on the 50.65(a)(4) process to adequately address the inoperability of snubbers that affect more than one train.

We have modified the proposed LCO to address snubbers that affect single and multiple trains. We expect that licensees will adopt the generic one-train allowance, and submit plant-specific analysis for any multiple train configurations they want to justify. If a detailed plant-specific seismic risk analysis is not available, an acceptable assumption for a simple bounding analysis is to assume loss of offsite power and the loss of all affected trains and systems.

Draft TSTF-372 Revision 2 LCO 3.0.8 wording also addressed seismic restraints and supports. We have concluded that LCO 3.0.8 should not contain seismic restraints or supports other than snubbers. The staff has determined that adequate guidance exists in NRC Bulletins 79-02, Revisions 0, 1, and 2, and Supplement 1 to Revision 1; 79-14, Revisions 0 and 1, and Supplements 1 and 2 to Revision 1; and Generic Letter 91-18, Revision 1 dated October 8, 1997. This precedence is documented in a letter dated February 20, 1992 to Northeast Nuclear Energy Company. The TSTF can evaluate this precedent and justify the need for a change, if appropriate.

Final Resolution: Superceded by Revision Final Resolution Date: 13-Dec-02

TSTF Revision 3 Revision Status: Closed

Revision Proposed by: TSTF

Revision Description:
Previous discussion drafts of TSTF-372 had two options. One or more inoperable snubbers that were associated with a single train were provided with a 72 hour delay time before declaring the supported system inoperable. However if a snubber was associated with more than one train, only a single such snubber can be inoperable to use the 72 hour delay time. The NRC accepted the delay time regarding snubbers that affect a single train, but they did not accept the provision for snubbers that affect multiple trains and asked for extensive plant-specific justification for applying a delay time for each snubber.

At a meeting between the TSTF, the Snubbers Users Group (SNUG), and the NRC on June 16, the NRC and the Industry discussed several options for moving ahead on TSTF-372. Following that discussion the SNUG discussed the issue at a meeting of their group. Based on the feedback from both meetings, a new revision was developed.

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TSTF Revision 3 Revision Status: Closed

This revision of TSTF-372 retains the original provisions and justification for inoperable snubbers that affect a single train and the 72 hour delay time. For inoperable snubbers that affect more than one train a 12 hour delay time is proposed.

TSTF Review Information

TSTF Received Date: 03-Oct-03 Date Distributed for Review: 03-Oct-03

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved Date: 08-Nov-03

NRC Review Information

NRC Received Date: 10-Nov-03

NRC Comments:

At a meeting between the RITSTF and the NRC on February 11, 2004, the NRC requested a simplified risk assessment of the use of the 12 hour delay time for snubbers that affect more than one train (e.g., LCO 3.0.8.b).

Final Resolution: NRC Requests Changes: TSTF Will Revise Final Resolution Date: 11-Feb-04

TSTF Revision 4 Revision Status: Active

Revision Proposed by: NRC

Revision Description:
At a meeting between the RITSTF and the NRC on February 11, 2004, the NRC requested a simplified risk assessment of the use of the 12 hour delay time for snubbers that affect more than one train (e.g., LCO 3.0.8.b). A simplified and conservative risk assessment is added to the discussion of LCO 3.0.8.b.

After insertion of the additional justification, a paragraph describing the integration of LCO 3.0.8 and maintenance practices needed to be moved from the end of the LCO 3.0.8.b discussion to prior to the LCO 3.0.8.a and LCO 3.0.8.b discussion for clarity.

Two editorial clarifications are made to the Bases (Insert 2).

The first sentence in Insert 2 stated, "LCO 3.0.8 establishes that systems are considered to remain capable of performing their intended safety function when the only issue associated with the system is that associated snubbers are not capable of performing their associated support function(s)." There was concern that the phrase "the only issue associated with the system" could be construed to imply that LCO 3.0.8 cannot be used if there are other degraded or nonconforming conditions associated with the supported system, even if those conditions have been determined to not affect operability. That was not the intent of the sentence. It was revised to state, "LCO 3.0.8 establishes conditions under which systems are considered to remain capable of performing their intended safety function when associated snubbers are not capable of providing their associated support function(s)." This is consistent with the Specifications. Note that the next sentence states, "This LCO states that the supported system is not considered to be inoperable solely due to one or more snubbers not capable of performing their associated support function(s)." These two sentence capture the intent of the original sentence while eliminating

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TSTF Revision 4 Revision Status: Active

the possible misinterpretation.

The Bases describe the times in LCO 3.0.8 by stating, "The [72 or 12] hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an accident or transient that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function ..." It was pointed out that for the vast majority of plants, the UFSAR accident analyses do not consider a seismic event concurrent with an accident or transient. To eliminate this point of possible confusion, the sentences were revised to state, "The [72 or 12] hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function ..." This change eliminates the point of possible confusion without changing the justification for the times.

All of the changes are indicated by revision bars in the right hand margin.

TSTF Review Information

TSTF Received Date: 06-Apr-04 Date Distributed for Review: 06-Apr-04

OG Review Completed: ☑ BWOG ☑ WOG ☑ CEOG ☑ BWROG

TSTF Comments:

(No Comments)

TSTF Resolution: Approved Date: 22-Apr-04

NRC Review Information

NRC Received Date: 23-Apr-04

Affected Technical Specifications

LCO 3.0	LCO and SR Applicability
LCO 3.0.2	LCO and SR Applicability
LCO 3.0.8	LCO and SR Applicability Change Description: Adds LCO 3.0.8
LCO 3.0.8 Bases	LCO and SR Applicability Change Description: Adds LCO 3.0.8

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1.0 DESCRIPTION

The proposed change would add a new LCO 3.0.8 to Section 3.0, LCO and SR Applicability, of the improved Standard Technical Specifications (ISTS) to allow a delay time for snubbers which cannot perform their required support function, before the supported systems are declared inoperable.

2.0 PROPOSED CHANGE

The proposed change will add a new LCO to Section 3.0, LCO and SR Applicability, of the ISTS. This new LCO, LCO 3.0.8, states:

> When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:
>
> a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or
>
> b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.
>
> At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

Bases describing the new LCO 3.0.8 are also added.

3.0 BACKGROUND

Component standard supports are those metal supports which are designed to transmit loads from the pressure-retaining boundary of the component to the building structure. Although classified as component standard supports, snubbers require special consideration due to their unique function. Snubbers are designed to provide no transmission of force during normal plant operations, but function as a rigid support when subjected to dynamic transient loadings. Therefore, snubbers are chosen in lieu of rigid supports where restricting thermal growth during normal operation would induce excessive stresses in the piping nozzles or other equipment. The location and size of the snubbers are determined by stress analysis. Depending on the design classification of the particular piping, different combinations of load conditions are established. These conditions combine loading during normal operation, seismic loading and loading due to plant accidents and transients to four different loading sets. These loading sets

are designated as: normal, upset, emergency, and faulted condition. The actual loading included in each of the four conditions depends on the design classification of the piping. The calculated stresses in the piping and other equipment for each of the four conditions must be in conformance with established design limits. Supports for pressure-retaining components are designed in accordance with the rules of the ASME Boiler and Pressure Vessel Code, Section III, Division 1 (Ref. 1). The combination of loadings for each support, including the appropriate stress levels, meet the criteria of Regulatory Guide 1.124, "Design Limits and Loading Combinations for Class 1 Linear-Type Component Supports" (Ref. 2), and Regulatory Guide 1.130, "Design Limits and Loading Combinations for Class 1 Plate-and -Shell-Type Component Supports" (Ref. 3).

As part of a plant's conversion to the Improved Standard Technical Specifications (ISTS) or implementation of an amendment prior to conversion, the former TS requirements for snubbers and many other support systems were relocated to a licensee controlled document such as the Technical Requirements Manual (TRM) or a program document. The conversion submittal or split report amendment application identified the snubbers as a candidate for relocation based on the fact that the TS requirements did not meet any of the four criteria in 10 CFR 50.36(c)(2)(ii) for inclusion in the ITS. The removal of these requirements from the TS was classified as a relocation as opposed to a more restrictive or less restrictive change, and the NRC approved the relocation without placing any restriction on the use of the relocated requirements. Therefore it was intended that when a snubber could not perform the required safety function for a system that is required to be OPERABLE by the TS, the licensee controlled document requirements for the support system would be invoked before the system TS LCO would become applicable. For example, if a snubber was determined to not meet the licensee controlled documents requirements, it needed to be either restored or replaced with a known working snubber within 72 hours, and an engineering evaluation would also need to be performed for the attached component within that same 72 hour period. If these actions are not completed within the allocated time, the system supported by the snubber would be declared inoperable and the Conditions and Required Actions for that system followed.

Contrary to this original intention, the NRC has taken the position that licensees are bound by Technical Specification LCOs 3.0.2 and 3.0.6 which require them to immediately enter the supported system Conditions and Required Actions when a snubber is removed for testing. In other words, once the snubber LCO is removed from the Technical Specifications, there is no exception from the Technical Specification requirements for snubbers and if a snubber is removed for maintenance, testing, or repair, the supported system Conditions and Required Actions must be entered immediately. The only exception is if the supported system has been analyzed and determined to be OPERABLE without the snubber.

In a July 9, 1999 letter from the NRC to Duke Power (Ref. 4) the NRC presented the above position. It was stated that if a licensee has implemented the Improved Standard Technical Specifications and relocated the Snubber specification from the Technical Specifications, the 72 hour snubber Required Action and Completion Time in the TRM could not be utilized prior to entering the supported system TS Condition and Required Actions. At the Winter 2000 Snubber Users Group (SNUG) meeting, Dr. Arnold Lee of the NRC reiterated that position.

At a June 13-14, 2000, TSTF/NRC meeting, Dr. Bill Beckner, Chief of the NRC Technical Specifications Branch, indicated that there was sufficient precedent to support a position that the 72 hour Completion Time can be considered a delay time. The NRC Technical Specification Branch has stated that not having the 72 hour window to perform testing is an unintended burden that resulted from implementing the Improved Technical Specifications. An example of

this precedence is in the NRC memorandum dated May 27, 1986, "Technical Specification Interpretation on Snubbers," which specifically stated that, "It should be recognized that the snubber TS are unique in that the operability requirements do not require consideration of associated system redundancy or impact until a snubber is out of service in excess of 72 hours." At that meeting, the NRC indicated that their preference for a resolution to the issue was some type of change to the Section 3.0 requirements. The intent of this proposed change is to preserve this precedent.

4.0 TECHNICAL ANALYSIS

The purpose of this change is to provide the same level of operational safety and flexibility provided by the snubbers as was provided prior to conversion to ITS or plant specific relocation of the snubber TS requirements. Prior to conversion to the ITS or plant specific relocation of snubber requirements, snubbers were located in the TS. If one or more snubbers were inoperable, the TS action statements for snubbers were taken. Under the pre-ITS conventions and rules, the supported system was not considered inoperable while the snubber action statements were being taken. Only when the snubber action times were expired (or if directed by the snubber action statements) was the supported system considered inoperable and it's the supported system TS action statements followed . This interpretation of the snubber TSs is based on the May 27, 1986 NRC memorandum (Ref. 5) which states, in part:

> "Normally snubbers would only be removed from a system for testing/surveillance purposes at a time when the system is not required to be operable. If, however, a snubber is removed from service, for any purpose, for a system which is required to be operable, the action statement for snubbers would apply. The action statement requires that inoperable snubber(s), those removed for testing, be restored to operable service in 72 hours.
>
> The action statement also requires that an engineering evaluation of the attached component be performed in accordance with specification 4.7.9.g or that the attached system be declared inoperable. This specification (4.7.9.g) notes that where snubbers are found inoperable, an engineering evaluation is to determine if the components to which inoperable snubbers are attached were adversely affected to assure that the component remains capable of meeting its designated service. The intent of this requirement is to assure that the system was not adversely affected by the inoperable snubber. This does not relate to the system or components capability to withstand a seismic event. Any degradation in seismic protection due to inoperable snubbers was taken into account in establishing the 72 hour allowed outage time.
>
> When a snubber is removed from service for testing, an engineering evaluation need not be performed. If the snubber is not returned to service in 72 hours, that system would be declared inoperable at this time since the snubber allowable out-of-service time limit would be exceeded."

Snubbers did not meet the 10 CFR 50.36(c)(2)(ii) criteria for retention in the TS and during ITS conversion or a plant specific relocation amendment were relocated to a licensee controlled document, such as a Technical Requirements Manual (TRM) or a program document. This relocation did not alter the requirements on the snubbers, but allowed those requirements to be changed under the auspices of 10 CFR 50.59. An unintended consequence of that relocation is to require, under ITS LCO 3.0.2, the supported systems remaining in TS to be immediately

declared inoperable and their Conditions and Required Actions taken when one or more snubbers is not capable of performing its required safety function.

This change in operation is not justified by any decrease in plant safety related to the relocation of the snubber requirements but is strictly an administrative consequence of the relocation. The plant design has not changed. The operational actions taken when one or more snubbers does not meet its requirements did not change as a consequence of the relocation. The snubbers continue to perform the function assumed in the safety analysis and the same actions continue to be taken if those snubbers cannot perform that function. However, under the ITS, the supported system must be declared inoperable and its Conditions and Required Actions followed, even to the point of a plant shutdown, even though there has been no change in the design or operation of the plant. This decreases plant safety and operational flexibility.

In addition, the position presented in the July 9, 1999 letter has had a substantial effect on snubber maintenance, testing, and repair across the industry. Where possible, snubber maintenance, testing, and repair is performed when the supported system is inoperable, such as during system maintenance windows or during refueling outages. However, these maintenance windows are crowded, so snubber inspection and maintenance must be kept to a minimum. The net effect of the position is to reduce the snubber testing to the minimum required by the relocated snubber requirements. This effect is not beneficial for the industry or the NRC.

The proposed LCO 3.0.8 corrects this unintended consequence and restores the level of plant safety afforded by the snubbers prior to their relocation.

The plant safety analyses assume that the required safety systems are OPERABLE, except for a single failure. When relying on Conditions and Required Actions, a single failure is not assumed. The purpose of TS Completion Times is to minimize the length of time that equipment can be out of service in order to minimize the probability that an accident could occur while equipment is unavailable. As a result, this change has no effect on the safety analyses. The inoperability of TS supported systems will continue to be limited by the delay time associated with the snubbers and other seismic restraints and the Conditions and Required Actions of the supported system. These delay times were considered to be consistent with the safety analysis assumptions prior to relocation from the subject TS to the TRM and continue to be consistent with the safety analysis.

Despite the fact that the industry (a)(4) guidance, NUMARC 93-01, does not currently address seismic risk, the use of LCO 3.0.8 should be considered with respect to other plant maintenance activities, and integrated into the existing 10 CFR 50.65(a)(4) process. This is necessary to ensure that maintenance is properly controlled, and emergent issues are properly addressed.

LCO 3.0.8.a

The analysis provided below considers snubbers not able to perform their associated support function(s) associated with only one train or subsystem of a multiple train or subsystem supported system or associated with a single train or subsystem supported system (i.e., LCO 3.0.8.a). At some plants, there is a limited population of snubbers which, by design, support more than one train or subsystem of a multiple train or subsystem supported system. LCO 3.0.8.b addresses these snubbers.

Pipe and equipment supports, in general, are not directly considered in developing the accident sequences for theoretical hazard evaluations. Further, some Probabilistic Risk Assessment (PRA) studies have indicated that snubbers are not of prime importance in a risk significant sequence (Ref. 6 and 7) and the function of snubbers is not essential in mitigating the consequences of a DBA or transient (Refs. 8 and 9). However, such studies may not be applicable to all U.S. plants. Therefore, a simplified risk assessment is provided to justify the proposed 72 hour delay time in LCO 3.0.8.a.

The initiating event of concern is loss of offsite power (LOOP). Ceramic insulators used in power distribution systems have a high confidence (95%) of low probability (5%) of failure (HCLPF) at an earthquake level of 0.09g, expressed in terms of peak ground acceleration. Thus, a 0.1g earthquake would be expected to have a 5% probability of causing a LOOP initiating event, resulting in a plant trip, starting and loading of emergency AC generators, and functioning of safety systems necessary to shut down the reactor and maintain it in a safe condition. This level of earthquake is assumed to fail the piping system for which the snubber(s) is out of service. This is a conservative bounding assumption for the assumed 0.1g earthquake. Piping systems are very rugged and the actual failure probability would be a function of the stress allowables and the number of snubbers removed for maintenance. Plants are designed such that failure of one train or subsystem should not impact the functionality of the remaining train or subsystem. There would be a small conditional probability of seismic failure of the remaining train (due to very large earthquakes), but this number is considered negligible for this analysis.

Earthquake frequencies in different parts of the US vary widely, however, as a very general approximation, the following is assumed: Using the EPRI seismic hazard curves, the frequency of a 0.1g earthquake is approximately 1E-3/yr for an Eastern US plant, and approximately 1E-1/yr for a West Coast US plant.

For the limiting (West Coast) plant:

1E-1/yr earthquake frequency X 5E-2 failure probability for insulators = 5E-3/yr frequency for earthquake induced LOOP.

Given the earthquake induced LOOP, one train of mitigation will remain available. (Non earthquake LOOP initiators would continue to have two trains of mitigation available.) A single train of safety grade equipment can be generally assumed to have a reliability of 98%. Thus, the probability of non-mitigation is 2%, or 2E-2.

Thus, for the West Coast plant, the change in Core Damage Frequency (CDF) would be 5E-3/yr X 2 E-2, or 1E-4/yr. For a 72 hour period, the incremental core damage probability (ICDP) would be 1E-4 X 72/8760 = 8 E-7.

For an Eastern US plant, the delta CDF would be 1E-6/yr, and the ICDP for a 72 hour period would be 8E-9.

NRC Regulatory Guide 1.182, guidance for implementation of 10 CFR 50.65(a)(4), endorses NUMARC 93-01. Section 11 of NUMARC 93-01 provides the following table of ICDP values and risk management actions:

ICDP and ILERP, for a specific planned configuration, may be considered as follows with respect to establishing risk management actions:

ICDP		ILERP
> 10^{-5}	configuration should not normally be entered voluntarily	> 10^{-6}
10^{-6} - 10^{-5}	assess non quantifiable factors & establish risk management actions	10^{-7} - 10^{-6}
< 10^{-6}	normal work controls	< 10^{-7}

As can be seen, the ICDP for the limiting West Coast plant is within the "normal work controls" region. Therefore, the risk contribution from snubber removal is within the normal range of maintenance activities carried out at the plant. Risk management actions may be considered for the West Coast plant, as the value approaches the 1E-6 ICDP threshold for establishment of risk management actions. Also, if LCO 3.0.8 is frequently used at a West Coast plant, its use should be tracked such that the annual CDF is not increased by more than a minimal amount over the plant's baseline value.

For most plants in the Eastern US, the ICDP value is so small that tracking should not generally be necessary. Some Eastern plants may have higher local earthquake frequencies, and could conservatively be treated similar to the West Coast plants.

LCO 3.0.8.b

Several versions of TSTF-372 have been developed to restore the previous snubber allowance and reviewed by the NRC. A remaining issue of concern is the use of a delay time for those snubbers that affect more than one train or subsystem of a multiple train or subsystem supported system (i.e., LCO 3.0.8.b).

At a meeting between the NRC, the TSTF, and the SNUG held on June 16, 2003 (see NRC Accession Number ML031710235 for the meeting minutes) the NRC stated that there are several options for evaluating the OPERABILITY of snubbers and their supported systems. These include 1) an engineering analysis of all snubbers; 2) performance of snubber maintenance within the time allotted for LCO 3.0.3, generally 7 hours; or 3) recognize that certain snubbers (e.g., that affect the OPERABILITY of multiple trains) need to be reviewed on a case by case basis, generally by a risk analysis.

Each of the three options are discussed below. The TSTF and the SNUG believe that a comprehensive engineering analysis could be performed that would demonstrate that any given snubber unable to perform its support function(s) would not render the supported system inoperable. This belief is based on a large number historical calculations performed to determine the effect of failed snubbers which consistently demonstrated that the supported system was OPERABLE. However, the cost of performing such a plant-by-plant, snubber-by-snubber analysis is prohibitive. Indeed, if such an analysis was performed and the expected results obtained, the need for LCO 3.0.8 would be eliminated as the Technical Specification system would always be OPERABLE. Therefore, a more cost-effective solution is desired.

Performing a case-by-case risk analysis of those snubbers that affect the OPERABILITY of multiple trains prior to snubber maintenance or on discovery of a failed snubber is also cost and schedule prohibitive. The use of risk analysis for the effect of seismic events on system OPERABILITY is not well established. Such analyses are time consuming and expensive,

providing a strong disincentive to use of such a provision for maintenance. A failed snubber that affects multiple trains would typically require entry into LCO 3.0.3 or a similarly short Completion Time, which does not provide enough time to perform a risk analysis. Furthermore, it is not clear how such a risk analysis would be factored into determining the OPERABILITY of the supported Technical Specification system as the NRC's stated position in Generic Letter 91-18 is that risk cannot be used to determine OPERABILITY.

The Staff also suggested the possibility of intentionally entering LCO 3.0.3 and performing snubber maintenance or repair in the 7 hours allotted before entering MODE 3 under LCO 3.0.3. Historically, the Staff has discouraged the intentional entry into LCO 3.0.3 for the purpose of preventative maintenance. For example, a letter from J. B. Martin, Region V, to H. R. Denton, NRR, dated March 18, 1987, entitled, "Intentional Entry into Technical Specification Limiting Condition for Operation 3.0.3", (Ref. 10) states that occasional entry into LCO 3.0.3 for surveillance or maintenance purposes may be appropriate, however this activity should be well thought-out in advance and strictly controlled by management oversight and appropriate procedures. It also states that intentional entry into LCO 3.0.3 for operational convenience should not be made, except under extremely unusual circumstances where a detailed review by the licensee has concluded that no reduction in safety will result. Because of the NRC's policy licensees have avoided intentional entry into LCO 3.0.3. We do not recommend promoting a position that intentional entry into LCO 3.0.3 is appropriate for the purpose of snubber testing, maintenance, or repair.

However, the TSTF believes that the premise of the NRC's suggestion at the June 16 meeting is valid. After discussions with the SNUG, we believe that a short period of time, in the order of the time frame allowed under LCO 3.0.3, is sufficient to allow necessary testing, maintenance, and repair of those snubbers that affect multiple trains. We are proposing, therefore, that a short period of time be allowed to restore those snubbers that affect multiple trains before declaring the supported system inoperable. We believe that a period of 12 hours is appropriate based on several factors. First, the 7 hour period allowed under LCO 3.0.3 is not a standard Completion Time in the ITS. Second, 12 hours corresponds to the normal length of a shift, simplifying scheduling. Third, standard industry practice is to not schedule maintenance which will take more than one-half the available time. In other words, given a 12 hour available period, work will be scheduled to be completed with 6 hours with the remaining 6 hours available to address unexpected events.

The TSTF and the SNUG believes that the proposed LCO 3.0.8.b will allow (and encourage) preventative maintenance, testing, and repair to be performed while minimizing plant risk from a seismic event with snubbers not able to perform their safety function(s).

The Staff requested a simplified risk assessment to support the proposed deferral time. The analysis provided below considers snubbers not able to perform their associated support function(s) associated with more than one train or subsystem of a multiple train or subsystem supported system (i.e., LCO 3.0.8.b). The following discussion provides a simplified and conservative assessment of risk associated with the use of LCO 3.0.8.b.

The initiating event of concern is loss of offsite power (LOOP). (Besides LOOP, other initiators could occur at higher g loadings from very large earthquakes; however this contribution is considered negligible for this analysis.) Ceramic insulators used in power distribution systems have a high confidence (95%) of low probability (5%) of failure (HCLPF) at an earthquake level of 0.09g. Thus, a 0.1g earthquake would be expected to have a 5% probability of causing a LOOP initiating event, resulting in a plant trip, starting and loading of emergency AC generators,

and functioning of safety systems necessary to shut down the reactor and maintain it in a safe condition. This level of earthquake is assumed to fail the piping or other components for those systems in which the snubber is out of service, and lose the safety function of the mitigating system. This is a conservative, bounding assumption for the assumed 0.1g earthquake. Piping systems are very rugged and the actual failure probability would be a function of the stress allowables and the number of removed or non-functioning snubbers. For the purposes of this conservative analysis, it is assumed that both trains of mitigation would be lost, since the affected snubber protects both trains. No credit is provided for recovery or emergency actions to establish alternate sources of makeup water or heat removal. Thus, the core damage frequency (CDF) would essentially be the frequency of the seismic-induced LOOP initiating event.

Earthquake frequencies in different parts of the US vary widely, however, as a very general approximation, the following is assumed: Using the EPRI seismic hazard curves, the frequency of a 0.1g earthquake is approximately 1x10-3/yr for an eastern US plant, and approximately 1x10-1/yr for a west coast US plant.

For the limiting (west coast) plant:

1x10-1/yr (earthquake frequency) x 5x10-2 (failure probability for insulators) = 5x10-3/yr (frequency for seismic-induced LOOP).

Since for this case the LOOP frequency is equal to the CDF, the delta-CDF for the west coast plant would be 5x10-3/yr. For a 12-hour period, the incremental core damage probability (ICDP) would be:

$$5x10^{-3} / yr \; x \frac{12 \, hours}{8760 \, hours / year} = 7x10^{-6}$$

For the eastern plant:

1x10-3/yr (earthquake frequency) x 5x10-2 (failure probability for insulators) = 5x10-5/yr (frequency for seismic-induced LOOP).

The delta-CDF would be 5x10-5/yr, and the ICDP for a 12-hour period would be 7x10-8.

It can be conservatively assumed that the delta-large early release frequency (LERF), and incremental large early release probability (ILERP) values resulting from the snubber out of service would be at least an order of magnitude less than the delta-CDF and ICDP values, respectively. Containment bypass scenarios, such as interfacing system loss of coolant accident (LOCA) or steam generator tube rupture (SGTR) would not be uniquely affected. The delta-LERF would thus correspond to the delta-CDF, and all plants have a conditional early containment failure probability of less than 0.1.

Thus, for the west coast plant, the delta-LERF would be conservatively bounded to 5x10-4/yr. For a 12-hour period, the ILERP would be:

$$5x10^{-4} / yr \; x \frac{12 \, hours}{8760 \, hours / year} = 7x10^{-7}$$

For an eastern US plant, the delta-LERF would be 5x10-6/yr, and the ILERP for a 12-hour period would be 7x10-9.

NRC Regulatory Guide 1.182, guidance for implementation of 10 CFR 50.65(a)(4), endorses NUMARC 93-01. Section 11 of NUMARC 93-01 provides the following table of ICDP values and risk management actions:

ICDP and ILERP, for a specific planned configuration, may be considered as follows with respect to establishing risk management actions:

ICDP		ILERP
> 10-5	- configuration should not normally be entered voluntarily	> 10-6
10-6 - 10-5	- assess non quantifiable factors - establish risk management actions	10-7 - 10-6
< 10-6	- normal work controls	< 10-7

Thus, the ICDP and ILERP for the limiting west coast plant is within, but near the upper limit, of the "risk management" region. The delta-CDF of 5x10-3/yr also exceeds guidance in NUMARC 93-01 relative to exceeding a 1x10-3/yr CDF value. However, this simplified and conservative analysis demonstrates that the provisions of LCO 3.0.8.b could be used cautiously for west coast plants. It is likely that a more sophisticated plant-specific seismic PRA performed for west coast plants would demonstrate even lower risk impact for the use of LCO 3.0.8.b.

For the eastern plants, the ICDP, ILERP, and delta-CDF values are within the range of other maintenance activities, and the use of LCO 3.0.8.b is acceptable based of this conservative analysis.

5.0 Regulatory Analysis

5.1 No Significant Hazards Consideration

The TSTF has evaluated whether or not a significant hazards consideration is involved with the proposed generic change by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed change involve a significant increase in the probability or consequences of an accident previously evaluated?

   Response: No.

   The proposed change allows a delay time before declaring supported TS systems inoperable when the associated snubber(s) cannot perform its required safety function. Entrance into Actions or delaying entrance into Actions is not an initiator of any accident previously evaluated. Consequently, the probability of an accident previously evaluated is not significantly increased. The consequences of an accident while relying on the delay time allowed before declaring a TS supported system inoperable and taking its Conditions and Required Actions are no different than the consequences of an accident under the same plant conditions while relying on the existing TS supported system Conditions and Required Actions. Therefore, the consequences of an accident previously evaluated are not significantly increased by this change. Therefore, this change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed change create the possibility of a new or different kind of accident from any accident previously evaluated?

   Response: No.

   The proposed change allows a delay time before declaring supported TS systems inoperable when the associated snubber(s) cannot perform its required safety function. The proposed change does not involve a physical alteration of the plant (no new or different type of equipment will be installed) or a change in the methods governing normal plant operation. Thus, this change does not create the possibility of a new or different kind of accident from any accident previously evaluated.

3. Does the proposed change involve a significant reduction in a margin of safety?

   Response: No.

   The proposed change allows a delay time before declaring supported TS systems inoperable when the associated snubber(s) cannot perform its required safety function. The proposed change restores an allowance in the pre-ISTS conversion TS that was unintentionally eliminated by the conversion. The pre-ISTS TS were considered to provide an adequate margin of safety for plant operation, as does the post-ISTS conversion TS. Therefore, this change does not involve a significant reduction in a margin of safety.

Based on the above, the TSTF concludes that the proposed change presents no significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

5.2 Applicable Regulatory Requirements/Criteria

This change does not alter compliance with any applicable regulatory requirements or criteria, but provides a delay time before declaring supported TS systems inoperable when the associated snubber(s) or other seismic restraint(s) cannot perform its required function. This delay time, similar to a Completion Time in the TS, does not alter the design or licensing basis of any system.

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the approval of the proposed change will not be inimical to the common defense and security or to the health and safety of the public.

6.0 ENVIRONMENTAL CONSIDERATION

A review has determined that the proposed change would change a requirement with respect to installation or use of a facility component located within the restricted area as defined in 10 CFR 20, or would change an inspection or surveillance requirement. However, the proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or significant increase in the amounts of any effluent that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

7.0 REFERENCES

1. ASME Boiler and Pressure Vessel Code, Section III.

2. Regulatory Guide 1.124, "Design Limits and Loading Combinations for Class 1 Linear-Type Component Supports," Revision 1, January 1978.

3. Regulatory Guide 1.130, "Design Limits and Loading Combinations for Class 1 Plate-and Shell-Type Component Supports," Revision 1, October 1978.

4. Letter dated July 9, 1999, from F. Rinaldi, NRC to H. Barron, Duke Energy Corporation, "McGuire Nuclear Station, Units 1 and 2 RE: Licensing Position Regarding Snubbers (TAC NOS. MA5519 and MA5520)."

5. NRC Memorandum dated May 27, 1986, from H. Denton to C. Norelius, "Technical Specification Interpretation on Snubbers."

6. "Zion Probabilistic Safety Study," Commonwealth Edison Company, September 1981.

7. "Millstone Unit 3 Probabilistic Safety Study," North-East Utilities Company, August 1983.

8. NRC Staff Review of Nuclear Steam Supply System Vendor Owners Groups' Application of the Commission's Interim Policy Statement Criteria to Standard Technical Specifications. Attachment to letter dated May 1988 from T. E. Murley, NRC to W. Wilgus, Chairman the B&W Owners Group.

9. WCAP-11618, "MERITS Program-Phase II, Task 5, Criteria Application," including Addendum 1 dated April, 1989, Section 3.7.9.

10. NRC Memorandum dated March 18, 1987, from J. B. Martin to H. R. Denton, "Intentional Entry into Technical Specification Limiting Condition for Operation 3.0.3."

INSERT 1

LCO 3.0.8 When one or more required snubbers are unable to perform their associated support function(s), any affected supported LCO(s) are not required to be declared not met solely for this reason if risk is assessed and managed, and:

a. the snubbers not able to perform their associated support function(s) are associated with only one train or subsystem of a multiple train or subsystem supported system or are associated with a single train or subsystem supported system and are able to perform their associated support function within 72 hours; or

b. the snubbers not able to perform their associated support function(s) are associated with more than one train or subsystem of a multiple train or subsystem supported system and are able to perform their associated support function within 12 hours.

At the end of the specified period the required snubbers must be able to perform their associated support function(s), or the affected supported system LCO(s) shall be declared not met.

INSERT 2

LCO 3.0.8 LCO 3.0.8 establishes conditions under which systems are considered to remain capable of performing their intended safety function when associated snubbers are not capable of providing their associated support function(s). This LCO states that the supported system is not considered to be inoperable solely due to one or more snubbers not capable of performing their associated support function(s). This is appropriate because a limited length of time is allowed for maintenance, testing, or repair of one or more snubbers not capable of performing their associated support function(s) and appropriate compensatory measures are specified in the snubber requirements, which are located outside of the Technical Specifications (TS) under licensee control. The snubber requirements do not meet the criteria in 10 CFR 50.36(c)(2)(ii), and, as such, are appropriate for control by the licensee.

If the allowed time expires and the snubber(s) are unable to perform their associated support function(s), the affected supported system's LCO(s) must be declared not met and the Conditions and Required Actions entered in accordance with LCO 3.0.2.

LCO 3.0.8.a applies when one or more snubbers are not capable of providing their associated support function(s) to a single train or subsystem of a multiple train or subsystem supported system or to a single train or subsystem supported system. LCO 3.0.8.a allows 72 hours to restore the snubber(s) before declaring the supported system inoperable. The 72 hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function and due to the availability of the redundant train of the supported system.

LCO 3.0.8.b applies when one or more snubbers are not capable of providing their associated support function(s) to more than one train or subsystem of a multiple train or subsystem supported system. LCO 3.0.8.b allows 12 hours to restore the snubber(s) before declaring the supported system inoperable. The 12 hour Completion Time is reasonable based on the low probability of a seismic event concurrent with an event that would require operation of the supported system occurring while the snubber(s) are not capable of performing their associated support function.

LCO 3.0.8 requires that risk be assessed and managed. Industry and NRC guidance on the implementation of 10 CFR 50.65(a)(4) (the Maintenance Rule) does not address seismic risk. However, use of LCO 3.0.8 should be considered with respect to other plant maintenance activities, and integrated into the existing Maintenance Rule process to the extent possible so that maintenance on any unaffected train or subsystem is properly controlled, and emergent issues are properly addressed. The risk assessment need not be quantified, but may be a qualitative awareness of the vulnerability of systems and components when one or more snubbers are not able to perform their associated support function.

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, ~~and~~ LCO 3.0.7, and LCO 3.0.8.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
LCO 3.0.3	When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 3 within 7 hours, b. MODE 4 within 13 hours, and c. MODE 5 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required. LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.
LCO 3.0.4	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

3.0 LCO Applicability

LCO 3.0.7 (continued)

all other TS requirements remain unchanged. Compliance with Test Exception LCOs is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.

Insert 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES	
LCOs	LCO 3.0.1 through LCO 3.0.7 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

BASES

LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Test Exception LCOs [3.1.8, 3.1.9, and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Test Exception LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Test Exception LCOs is optional. A special operation may be performed either under the provisions of the appropriate Test Exception LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Test Exception LCO, the requirements of the Test Exception LCO shall be followed.

Insert 2

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, ~~and~~ LCO 3.0.7, and LCO 3.0.8.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.
LCO 3.0.3	When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 3 within 7 hours, b. MODE 4 within 13 hours, and c. MODE 5 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required. LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.
LCO 3.0.4	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. LCO 3.0.4 is only applicable for entry into a MODE or others specified condition in the Applicability in MODES 1, 2, 3, and 4.

3.0 LCO Applicability

LCO 3.0.7 (continued)

is optional. When a Test Exception LCO is desired to be met but is not met, the ACTIONS of the Test Exception LCO shall be met. When a Test Exception LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall be made in accordance with the other applicable Specifications.

Insert 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES	
LCOs	LCO 3.0.1 through LCO 3.0.8 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

BASES

LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Test Exception LCOs [3.1.8 and 3.4.19] allow specified Technical Specification (TS) requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Test Exception LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Test Exception LCOs is optional. A special operation may be performed either under the provisions of the appropriate Test Exception LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Test Exception LCO, the requirements of the Test Exception LCO shall be followed.

Insert 2

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, and LCO 3.0.7. and LCO 3.0.8
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required, unless otherwise stated.
LCO 3.0.3	When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 3 within 7 hours, b. [MODE 4 within 13] hours, and c. MODE 5 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required. LCO 3.0.3 is only applicable in MODES 1, 2, 3, and 4.
LCO 3.0.4	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, 3, and 4.

3.0 LCO Applicability

LCO 3.0.7 (continued)

STE LCOs is optional. When an STE LCO is desired to be met but is not met, the ACTIONS of the STE LCO shall be met. When an STE LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

Insert 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES	
LCOs	LCO 3.0.1 through LCO 3.0.~~7~~8 establish the general requirements applicable to all Specifications and apply at all times unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

BASES

LCO 3.0.7 (continued)

conduct of the special test, those Surveillances need not be performed unless specified by the ACTIONS or SRs of the STE LCO.

ACTIONS for STE LCOs provide appropriate remedial measures upon failure to meet the STE LCO. Upon failure to meet these ACTIONS, suspend the performance of the special test and enter the ACTIONS for all LCOs that are then not met. Entry into LCO 3.0.3 may possibly be required, but this determination should not be made by considering only the failure to meet the ACTIONS of the STE LCO.

Insert 2

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, and LCO 3.0.7. , and LCO 3.0.8
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.
LCO 3.0.3	When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 2 within [7] hours, b. MODE 3 within 13 hours, and c. MODE 4 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required. LCO 3.0.3 is only applicable in MODES 1, 2, and 3. **- REVIEWER'S NOTE -** The brackets around the time provided to reach MODE 2 allow a plant to extend the time from 7 hours to a plant specific time. Before the time can be changed, plant specific data must be provided to support the extended time.
LCO 3.0.4	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified

LCO Applicability

LCO 3.0.6 (continued)

When a support system's Required Action directs a supported system to be declared inoperable or directs entry into Conditions and Required Actions for a supported system, the applicable Conditions and Required Actions shall be entered in accordance with LCO 3.0.2.

LCO 3.0.7

Special Operations LCOs in Section 3.10 allow specified Technical Specifications (TS) requirements to be changed to permit performance of special tests and operations. Unless otherwise specified, all other TS requirements remain unchanged. Compliance with Special Operations LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

Insert 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES	
LCOs	LCO 3.0.1 through LCO 3.0.8 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

BASES

LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Special Operations LCOs in Section 3.10 allow specified TS requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Special Operations LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Special Operations LCOs is optional. A special operation may be performed either under the provisions of the appropriate Special Operations LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Special Operations LCO, the requirements of the Special Operations LCO shall be followed. When a Special Operations LCO requires another LCO to be met, only the requirements of the LCO statement are required to be met regardless of that LCO's Applicability (i.e., should the requirements of this other LCO not be met, the ACTIONS of the Special Operations LCO apply, not the ACTIONS of the other LCO). However, there are instances where the Special Operations LCO ACTIONS may direct the other LCOs' ACTIONS be met. The Surveillances of the other LCO are not required to be met, unless specified in the Special Operations LCO. If conditions exist such that the Applicability of any other LCO is met, all the other LCO's requirements (ACTIONS and SRs) are required to be met concurrent with the requirements of the Special Operations LCO.

Insert 2

3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

LCO 3.0.1	LCOs shall be met during the MODES or other specified conditions in the Applicability, except as provided in LCO 3.0.2, ~~and~~ LCO 3.0.7, and LCO 3.0.8.
LCO 3.0.2	Upon discovery of a failure to meet an LCO, the Required Actions of the associated Conditions shall be met, except as provided in LCO 3.0.5 and LCO 3.0.6. If the LCO is met or is no longer applicable prior to expiration of the specified Completion Time(s), completion of the Required Action(s) is not required unless otherwise stated.
LCO 3.0.3	When an LCO is not met and the associated ACTIONS are not met, an associated ACTION is not provided, or if directed by the associated ACTIONS, the unit shall be placed in a MODE or other specified condition in which the LCO is not applicable. Action shall be initiated within 1 hour to place the unit, as applicable, in: a. MODE 2 within 7 hours, b. MODE 3 within 13 hours, and c. MODE 4 within 37 hours. Exceptions to this Specification are stated in the individual Specifications. Where corrective measures are completed that permit operation in accordance with the LCO or ACTIONS, completion of the actions required by LCO 3.0.3 is not required. LCO 3.0.3 is only applicable in MODES 1, 2, and 3.
LCO 3.0.4	When an LCO is not met, entry into a MODE or other specified condition in the Applicability shall not be made except when the associated ACTIONS to be entered permit continued operation in the MODE or other specified condition in the Applicability for an unlimited period of time. This Specification shall not prevent changes in MODES or other specified conditions in the Applicability that are required to comply with ACTIONS or that are part of a shutdown of the unit. Exceptions to this Specification are stated in the individual Specifications. LCO 3.0.4 is only applicable for entry into a MODE or other specified condition in the Applicability in MODES 1, 2, and 3.

LCO Applicability

LCO 3.0.7 (continued)

Operations LCOs is optional. When a Special Operations LCO is desired to be met but is not met, the ACTIONS of the Special Operations LCO shall be met. When a Special Operations LCO is not desired to be met, entry into a MODE or other specified condition in the Applicability shall only be made in accordance with the other applicable Specifications.

Insert 1

B 3.0 LIMITING CONDITION FOR OPERATION (LCO) APPLICABILITY

BASES	
LCOs	LCO 3.0.1 through LCO 3.0.~~7~~8 establish the general requirements applicable to all Specifications and apply at all times, unless otherwise stated.
LCO 3.0.1	LCO 3.0.1 establishes the Applicability statement within each individual Specification as the requirement for when the LCO is required to be met (i.e., when the unit is in the MODES or other specified conditions of the Applicability statement of each Specification).
LCO 3.0.2	LCO 3.0.2 establishes that upon discovery of a failure to meet an LCO, the associated ACTIONS shall be met. The Completion Time of each Required Action for an ACTIONS Condition is applicable from the point in time that an ACTIONS Condition is entered. The Required Actions establish those remedial measures that must be taken within specified Completion Times when the requirements of an LCO are not met. This Specification establishes that: a. Completion of the Required Actions within the specified Completion Times constitutes compliance with a Specification and b. Completion of the Required Actions is not required when an LCO is met within the specified Completion Time, unless otherwise specified. There are two basic types of Required Actions. The first type of Required Action specifies a time limit in which the LCO must be met. This time limit is the Completion Time to restore an inoperable system or component to OPERABLE status or to restore variables to within specified limits. If this type of Required Action is not completed within the specified Completion Time, a shutdown may be required to place the unit in a MODE or condition in which the Specification is not applicable. (Whether stated as a Required Action or not, correction of the entered Condition is an action that may always be considered upon entering ACTIONS.) The second type of Required Action specifies the remedial measures that permit continued operation of the unit that is not further restricted by the Completion Time. In this case, compliance with the Required Actions provides an acceptable level of safety for continued operation.

BASES

LCO 3.0.6 (continued)

the support system. The ACTIONS for a support system LCO adequately addresses the inoperabilities of that system without reliance on entering its supported system LCO. When the loss of function is the result of multiple support systems, the appropriate LCO is the LCO for the support system.

LCO 3.0.7

There are certain special tests and operations required to be performed at various times over the life of the unit. These special tests and operations are necessary to demonstrate select unit performance characteristics, to perform special maintenance activities, and to perform special evolutions. Special Operations LCOs in Section 3.10 allow specified TS requirements to be changed to permit performances of these special tests and operations, which otherwise could not be performed if required to comply with the requirements of these TS. Unless otherwise specified, all the other TS requirements remain unchanged. This will ensure all appropriate requirements of the MODE or other specified condition not directly associated with or required to be changed to perform the special test or operation will remain in effect.

The Applicability of a Special Operations LCO represents a condition not necessarily in compliance with the normal requirements of the TS. Compliance with Special Operations LCOs is optional. A special operation may be performed either under the provisions of the appropriate Special Operations LCO or under the other applicable TS requirements. If it is desired to perform the special operation under the provisions of the Special Operations LCO, the requirements of the Special Operations LCO shall be followed. When a Special Operations LCO requires another LCO to be met, only the requirements of the LCO statement are required to be met regardless of that LCO's Applicability (i.e., should the requirements of this other LCO not be met, the ACTIONS of the Special Operations LCO apply, not the ACTIONS of the other LCO). However, there are instances where the Special Operations LCO ACTIONS may direct the other LCOs' ACTIONS be met. The Surveillances of the other LCO are not required to be met, unless specified in the Special Operations LCO. If conditions exist such that the Applicability of any other LCO is met, all the other LCO's requirements (ACTIONS and SRs) are required to be met concurrent with the requirements of the Special Operations LCO.

Insert 2